

(12) UK Patent Application (19) GB (11) 2 192 530 (13) A

(43) Application published 20 Jan 1988

(21) Application No 8617713

(22) Date of filing 19 Jul 1986

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(51) INT CL.
A47K 3/22

(52) Domestic classification (Edition J):
A4B 1F 1G 5AX

(56) Documents cited
GB 1474729

(58) Field of search
A4B
A4N

(54) Adjustable support bracket for shower handset

(57) The support bracket 101 has a support member 114 mounted on a spindle 115 for controlled adjustable but limited rotation to change the position of an entry socket portion 123 in which a shower handset may be received. The member 114 has a hub 120 from which an arm 121 projects terminating in a forked portion 122 defining the entry socket 123. A U-shaped spring 117 has side limbs 117a which extend either side of the hub 120, and there are radial grooves 124 and ribs 125 respectively on the hub 120 and a side limb 117a which inter-engage to act as a detent device on selective adjustment of the position of the arm 121. The bracket may be for direct mounting on a wall or partition by a mounting fixture 105, or as described in another embodiment, the bracket may include clamping means for mounting on a slide rail.

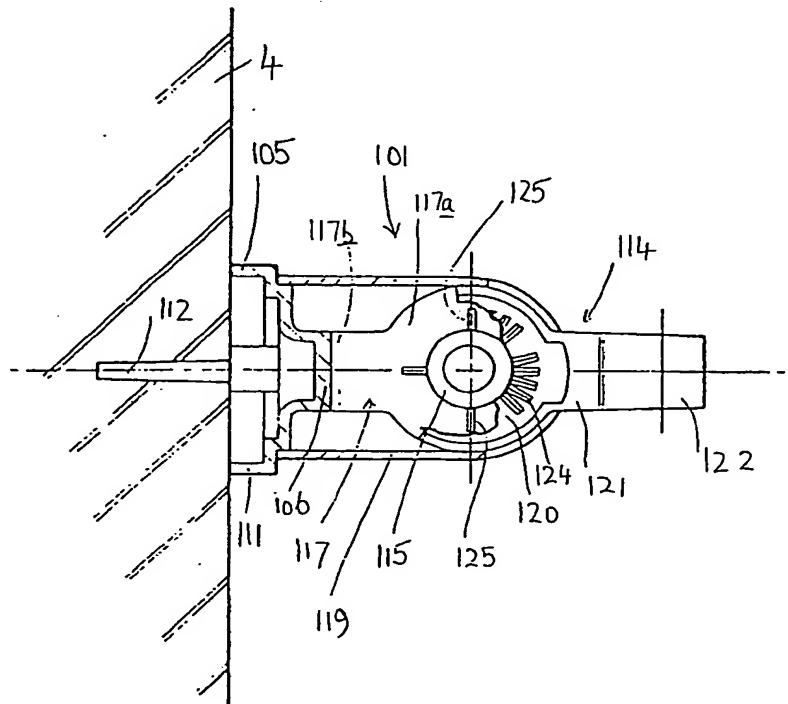
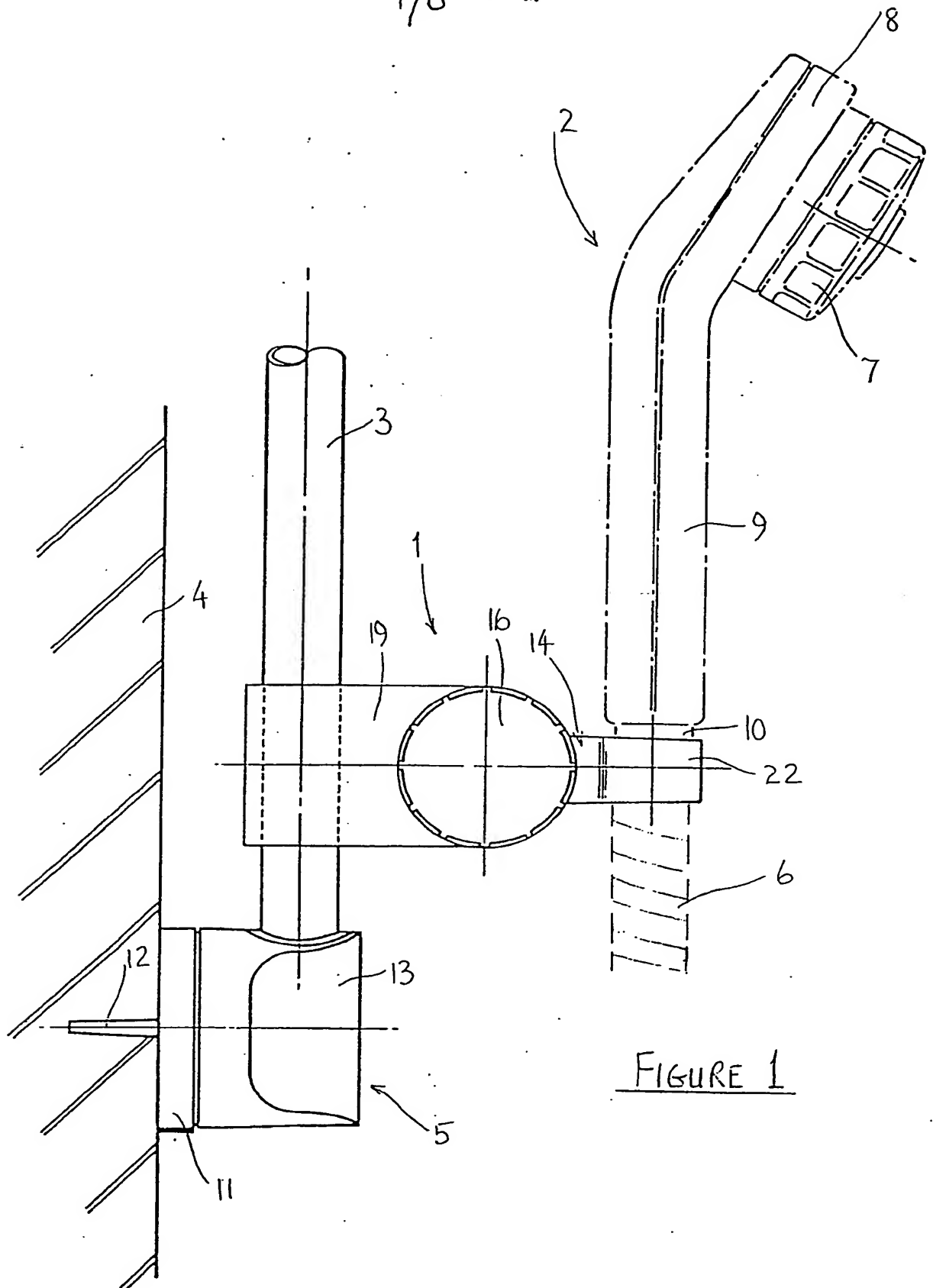


FIGURE 7

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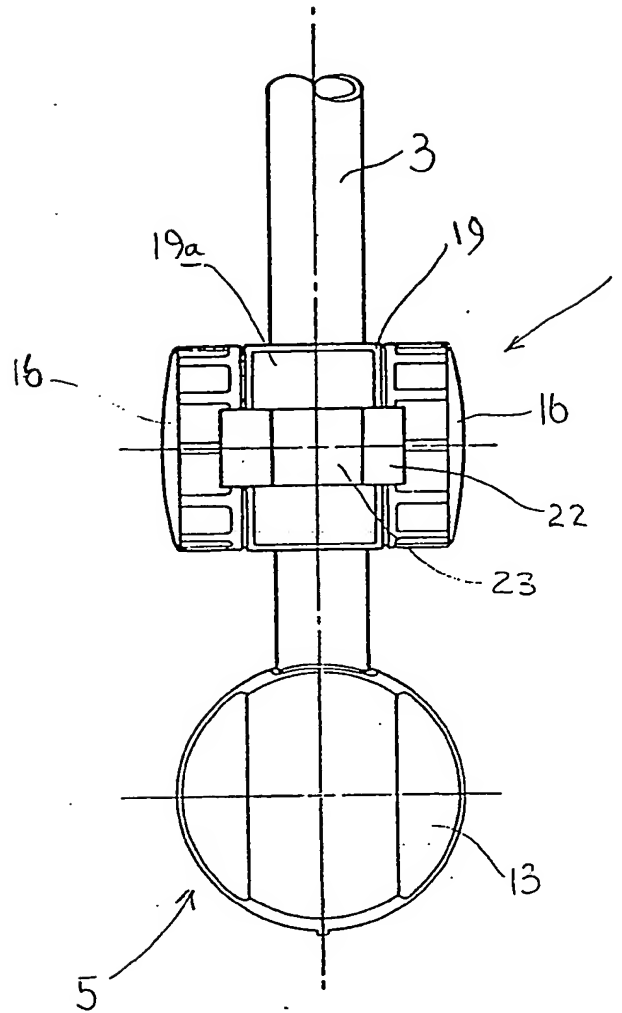


FIGURE 2

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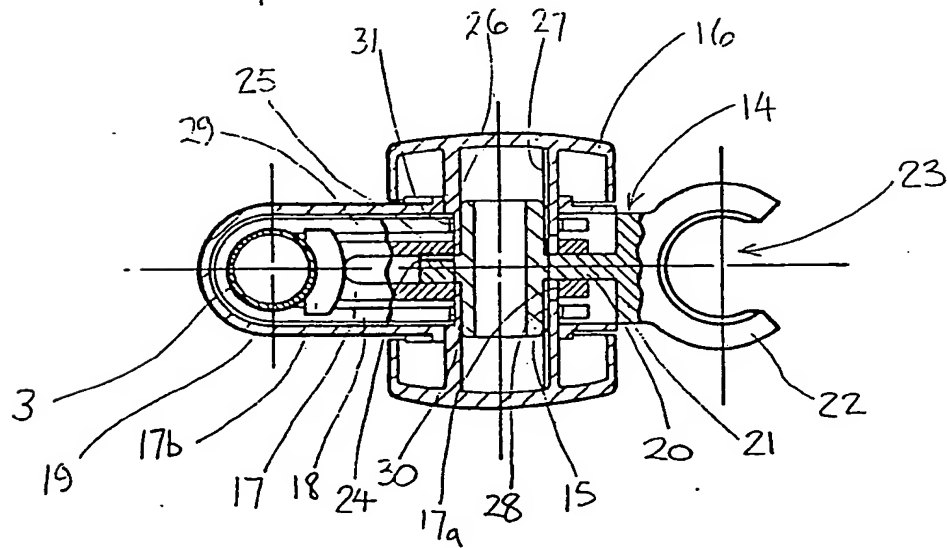
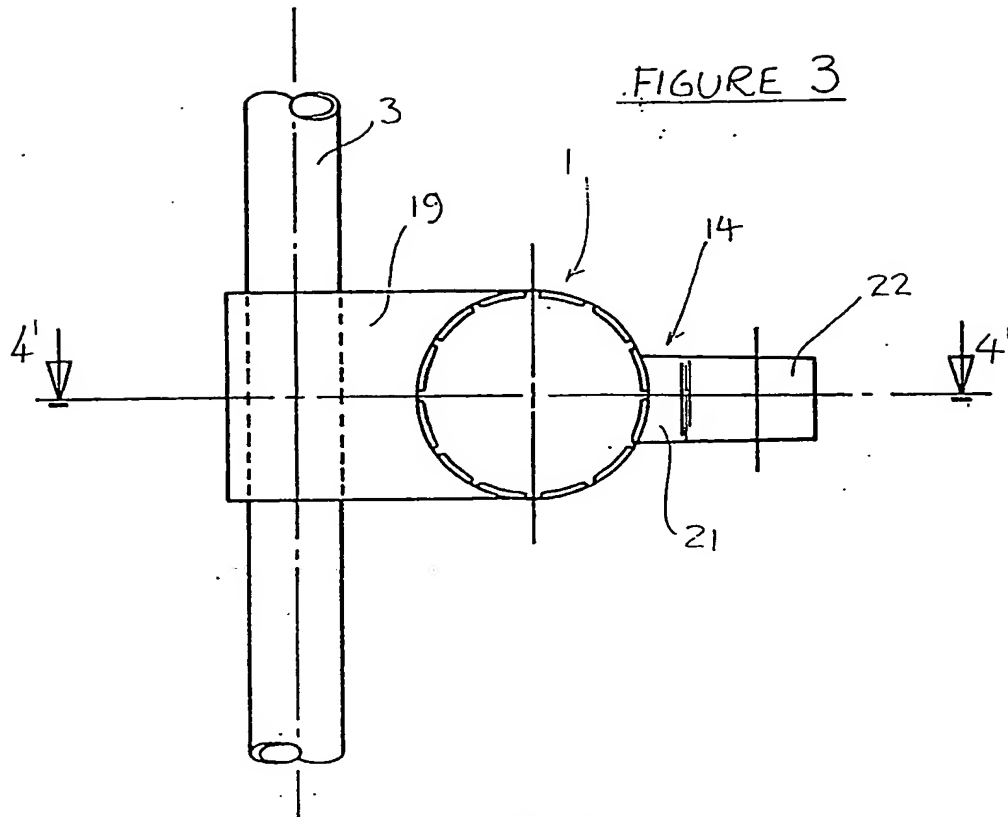


FIGURE 4

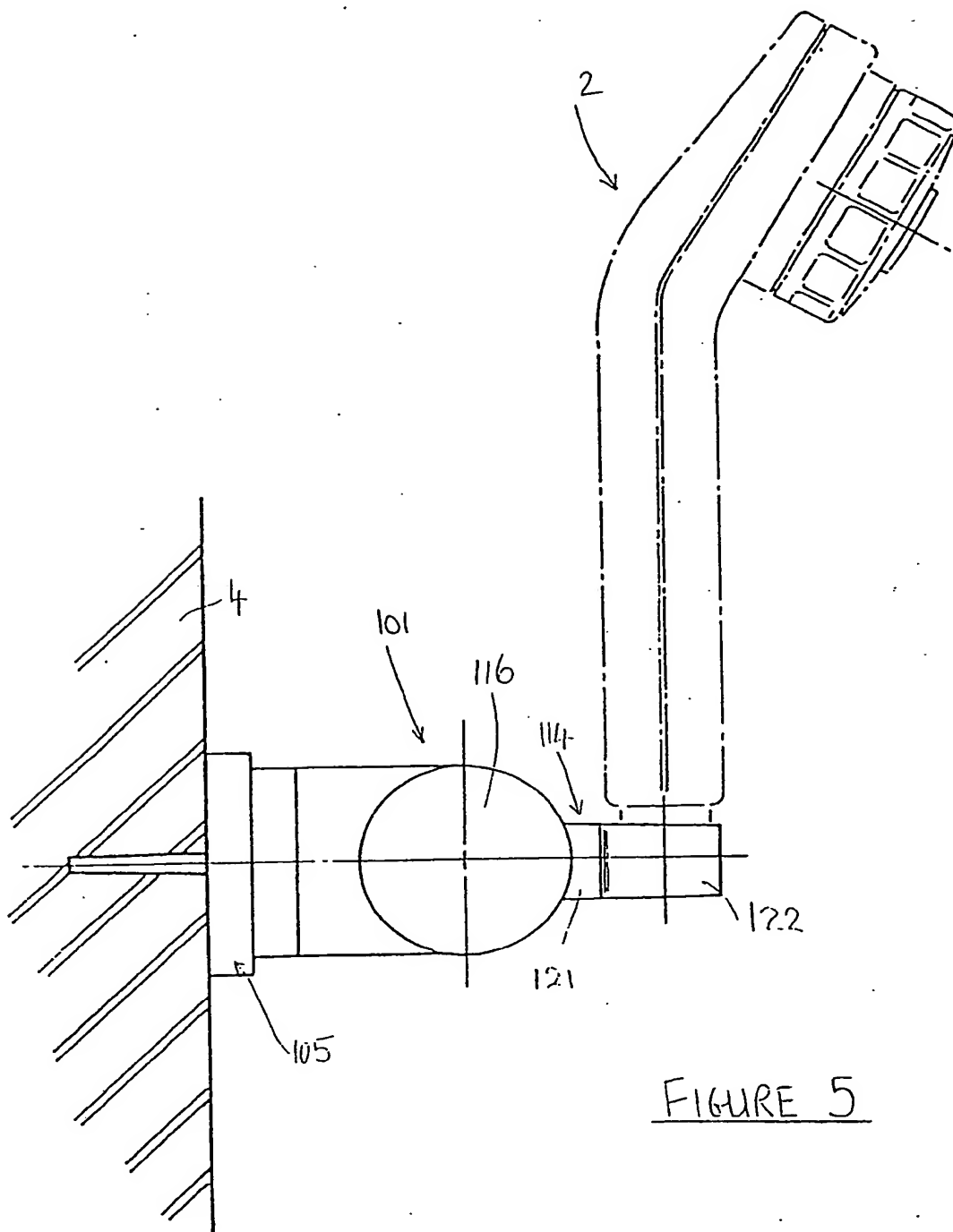


FIGURE 5

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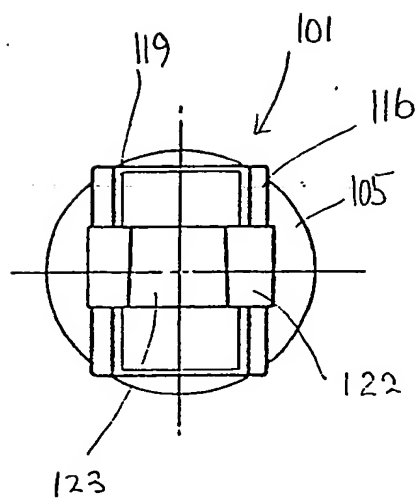


FIGURE 6

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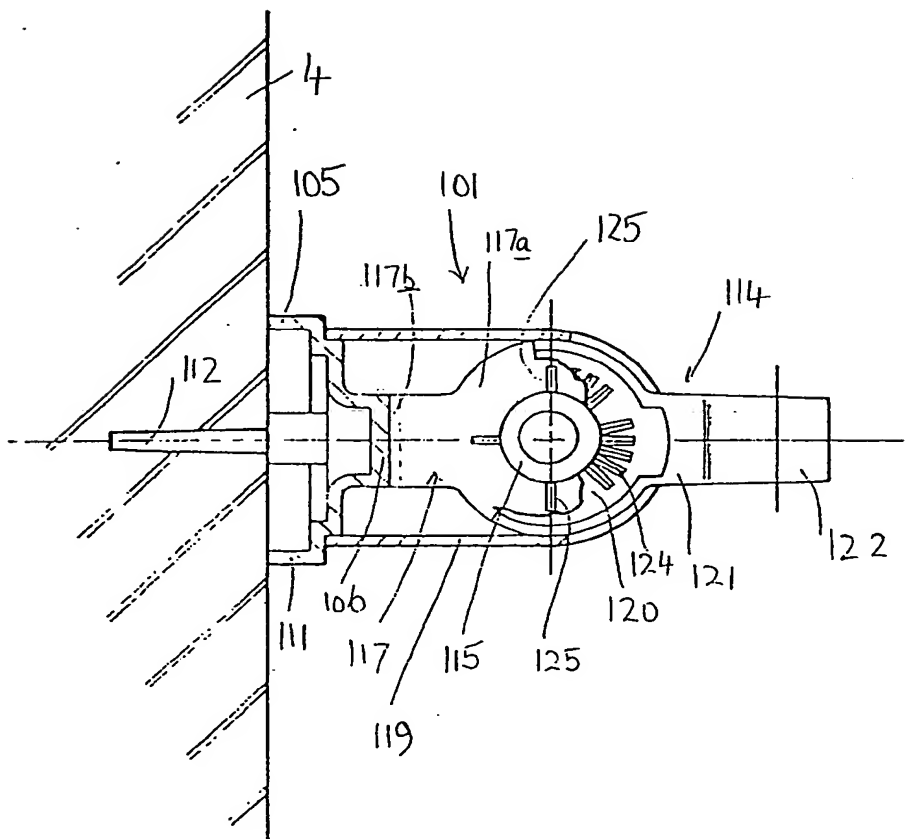


FIGURE 7

SPECIFICATION

Adjustable support bracket for shower handset

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This invention relates to an adjustable support bracket for a shower handset as used for ablutionary purposes.

10 It is already known to provide a support bracket which holds the handset of the shower to direct the water spray in the desired direction required by the user. Conventionally, the handset is carried at the end of a flexible hose through which the water is supplied to the rose or other spray head integral with the handset. Usually, the support bracket and the handset are designed so that they can be separated in order that the user can hand hold the handset for local direction of the spray, for instance for peri-anal or hair washing.

20 Certain types of known support brackets have permitted adjustment of the bracket to vary the angle and/or position of the bracket whereby the user can vary the trajectory of the water spray. However, in many of the known constructions, the adjustment has merely been done by some friction clamp which either deteriorates in use or fails due to the affects of water on the frictional surfaces. In addition, many of the clamping devices have only provided a low degree of friction achieved by mere manual tightening of some clamp screw, and such frictional restraint is insufficient to prevent movement of the bracket and handset mounted therein, either in use or when initial water pressure reaches the spray or rose of the handset.

30 It is an object of this invention to provide an adjustable support bracket for a shower handset which obviates the problems just mentioned.

40 It is a further object of this invention to provide an improved adjustable support bracket for a shower handset which is of compact and simple construction and by which the handset can be held in any one of a number of selectable positions.

50 Other objectives and advantages achieved by the invention will be apparent later.

60 According to this invention, we provide an adjustable support bracket for a shower handset, the bracket comprising a support member having a socket entry portion for receiving and supporting a shower handset, the socket entry portion being radially spaced from a hub portion of the support member that is mounted for controlled rotational movement on a spindle, and a spring member biased towards the hub portion to engage same with the hub portion and the spring member each being provided with a plurality of arcuately spaced inter-engagable formations that cooperate as a detent device to enable the support member to be rotated on the spindle to any one of a

plurality of adjustment positions defined by the inter-engagement of the formations.

70 By this invention, the position of the support member for holding and supporting the shower handset is maintained by the spring force and the inter-engagement of the formations, and to adjust the position of the support member, all that is required is for the socket entry portion of the support member to be pushed to turn on the spindle thereby overcoming the spring bias force until the required position is achieved with the formations being automatically re-engaged at a different position under the spring force. Thus, no special manual steps for undoing or tightening of a clamping or friction device are required.

80 Preferably, the hub portion of the support member comprises an annular flange of which one face is formed with arcuately spaced radially extending formations for inter-engagement with the formations of the spring member.

85 By such arrangement, the support bracket can be made compact with the hub being mounted on the spindle and the spring member engaging one side of the annular flange.

90 The formations may be respective grooves and ribs for complementary inter-engagement. The formations may be arranged in series and angularly spaced for a wide range of selectable positions.

95 Conveniently, the spring member may comprise a U-shaped spring of which each side limb extends to one side of the annular flange of the hub that is received between the limbs of the spring member with the base of the spring member being remote from the socket entry portion of the support member.

100 By such form of construction, the spring bias forces may be distributed more uniformly and a balanced assembly and construction is achieved.

105 In one particular form of the invented adjustable support bracket, the bracket further comprises a mounting plate adapted for securing to a structure with the mounting plate supporting the base of the U-shaped spring member.

110 In another form of the invented adjustable support bracket, the bracket further comprises clamping means for slidably mounting the bracket on a slide rail.

115 The clamping means may comprise a stirrup arranged for movement relative to the spindle by cam means provided by a rotatable knob mounted on the spindle having an eccentric face engaging the stirrup so that the stirrup is displaced relative to a rail embraced by the stirrup on rotational movement of the rotatable knob.

120 Conveniently, the spindle may mount a knob on each end so that the clamping means may be operated on either side of the support bracket.

125 In either form of the invented adjustable support bracket, a suitable housing or enclosure

sure is provided for the assembly and through which the support member projects with clearance for the socket entry portion to move through the range of adjusting movement.

- 5 Other features of the invented support bracket are described later herein.

The invention will now be described, by way of example only, with reference to the accompanying drawings wherein:

- 10 *FIGURE 1* is a side elevational view of a first embodiment of an adjustable support bracket according to this invention shown with a handset supported on the bracket and the bracket being mounted on a slide bar;

- 15 *FIGURE 2* is a front elevation of the first embodiment as shown in Figure 1 omitting the handset;

- 20 *FIGURE 3* is a detail side elevation of the bracket shown in Figure 1 omitting the handset;

FIGURE 4 is a sectional view of the bracket mounted on the slide bar taken on line 4'-4' shown in Figure 3;

- 25 *FIGURE 5* is a side elevation of a second embodiment of an adjustable support bracket according to this invention shown with a handset supported on the bracket and the bracket being mounted directly on a fixed structure;

- 30 *FIGURE 6* is a front elevational view of the second embodiment as shown in Figure 5 omitting the handset; and

- 35 *FIGURE 7* is a partly sectional side elevational view of the second embodiment as shown in Figure 5 and omitting the handset.

- With reference to the first embodiment of this invention as depicted in Figures 1, 2, 3 and 4, the adjustable support bracket 1 is shown supporting a handset 2 with the bracket 1 being carried on a slide bar 3 fixedly secured to a support structure 4 by a fixture 5.

- In known manner, the handset 2 is connected to a flexible hose 6 through which water is supplied to the spray assembly 7 mounted on the head 8 of the handset remote from the hose 6. The handset 2 includes a handgrip portion 9 and there is a waterway (not shown) through the handset from the hose 6. A union gland 10 is provided to connect the handset to the hose 6, and in this arrangement, it is the union gland 10 which is fitted into the support bracket 1 to hold the handset 2 in position for use.

- Also in known manner, the support bracket 55 1 is mounted on the slide rail 3 of which only part is shown but of which the other end would be secured to the structure 4 by another fixture similar to fixture 5. The rail is arranged to extend vertically on the structure in order that the vertical position of the handset be varied for height selection. The fixture 5 may be of any suitable type and is shown as a base plate 11 arranged to be fixed to the structure 4 by suitable screws 12 with an 65 enclosure trim or cover 13 extending over the

base plate and providing a socket entry for the end of the rail 3.

- As best shown in Figure 4, the support bracket 1 comprises a support member 14 70 mounted for controlled rotation on a spindle 15 with each end of the spindle 15 mounting one of two similar knobs 16 and the spindle 15 extends through clearance openings in each limb 17a of a U-shaped spring member 17 of which the base 17b is arranged to engage the rail 3. For the purpose of clamping the support bracket 1 to the slide rail 3, the bracket further comprises a stirrup 18 for camming co-operation with the knobs 16 as 75 later described. A housing 19 encloses the assembly.

- The support member 14 has a hub 20 which is mounted on the centre portion of the spindle 15 for controlled movement on the 85 spindle 15. The support member 14 also includes a mounting arm 21 projecting radially from the hub 20 and terminating in forked portion 22 that provides an entry socket 23 for the handset 2 and hose 6 to hold and support the handset in a selected position.

- The housing 19 has a clearance opening 19a through which the exposed parts of the support member 14 including the forked portion 22 extend for the full range of adjustable 90 movement of the support member 14 as later described.

- The hub 20 provides opposed annular faces that extend between the limbs 17a of the spring member 17 with the limbs being biased towards each other to engage each face of the hub 20. One annular face of the hub 20 is provided with a plurality of radially extending spaced apart groove formations 24 100 and the adjacent face of one limb of the spring member 17 is formed with a plurality of radially extending rib formations 25. The respective groove and rib formations 24, 25 are arranged for inter-engagement so that under the spring bias, the grooved hub and 110 ribbed limb of the spring act as a detent device to hold the support member 14 in a selected position.

- As will be appreciated, the spindle 15 extends transversely to the slide rail 3 and the axis of rotation of the support member 14 about the spindle is horizontal. Accordingly, the support member 14 may be adjusted by the user by merely moving the forked portion 22 (with or without the handset in situ) to change the attitude of the entry socket 23 up 120 or down to change the trajectory required from the spray head. The spring-loaded engagement of the rib and groove formations hold the support member in the selected position, and this adjustment of the support member 14 can be done without any need for manual dexterity or the application of manual force as is required in friction clamping brackets of known kind.

- 130 With reference to the other parts of the

support bracket 1 for clamping and adjusting the whole assembly in a desired position on the slide rail 3, each knob 16 has an internal hollow boss 26 formed with an axial rib 27 that engages with a respective axial groove 28 formed in each end portion of the spindle 15 extending from the central portion on which the support member hub is mounted.

Accordingly, the two knobs 16 and the spindle are assembled and located for rotation with the boss 26 of each knob 16 extending through a complementary opening formed in the housing 19.

The stirrup 18 is of channel shape arranged to extend around the slide rail 3 with each wall 29 of the channel being pierced by a circular shaped opening 30 through which the respective inner portion of each knob boss 26 extends. The inner portion of each boss 26 is formed with an outer eccentric or cam face 31 which is arranged for rotational camming engagement with the wall edge of the respective opening 30 in the stirrup wall 29. Thus, on rotation of either knob 16, the engagement of the eccentric faces 31 with the stirrup walls 29 at the openings 30 causes the stirrup to be displaced both relative to the housing 19 and to the spindle 15 so as to be drawn towards or away from clamping engagement with the rail 3. The base 17b of the spring 17 provides a reaction abutment engaging the opposed side of the rail 3 for the clamping action.

The support bracket 1 may thus be easily adjusted and clamped to the rail 3 at the desired vertical position by turning either one of the knobs 16 to release the clamping forces, and then sliding the bracket 1 along the rail 3 to the desired position and re-clamping the bracket 1 by counter-turning of one of the knobs 16 to tighten the stirrup 18 against the rail 3. This frictional clamping adjustment is separate to the independent adjustment of the support member 14 by which the angle of the handset may be varied as desired and as aforescribed.

Other features of the invented support bracket will now be described also with reference to the second embodiment as depicted in Figures 5, 6 and 7.

In the second embodiment of the invented adjustable support bracket 101, the bracket supports a handset 2 which is the same as previously described and for which the same reference numbers are used in the drawings. The bracket 101 is for direct mounting on a structure 4 by a mounting fixture 105.

The support bracket 101 comprises a support member 114 mounted for controlled rotation on a spindle 115 with the support member 114 having a hub 120 from which an arm 121 projects terminating in a forked portion 122 that provides an entry socket 123 for the handset 2. These components and the arrangement thereof are substantially the same

as previously described with reference to the first embodiment.

In addition there is a U-shaped spring member 117 having two side limbs 117a and a base 117b with the spring member 117 being disposed as aforescribed except that the base 117b is fixedly located in the fixture 105.

The fixture 105 comprises a base plate 111 arranged to be secured to the structure 4 by suitable screws 112 with the fixture 105 having a pedestal 106 on which the spring base 117b is secured with a housing 119 enclosing both the inner portions of the support member 114 and associated parts and closing over the pedestal 106 to provide a neat trim for the fixture 105.

As will be understood, in this second embodiment there is no arrangement for clamping the bracket to a slide rail, and to enclose the ends of the spindle 115, the bracket 101 includes trim covers 116 that are mounted on each spindle end which close onto the housing 119 as a decorative feature.

As best shown in Figure 7, the hub 120 of the support member 114 has an annular face which is provided with a plurality of radially extending groove formations 124 that are arranged in arcuately spaced sets of five grooves. The adjacent face of one limb 117a of the spring 117 is formed with radial rib formations 125 that are spaced apart by about 90° with the respective groove and rib formations 124, 125 being arranged for inter-engagement acting as a spring-biased detent device to hold the support member 114 in a selected position in the similar manner as previously described with reference to the first embodiment.

The arrangement and angular spacing of the respective groove and rib formations is chosen to provide a sensible full range of adjustment angles for the support member 114, and the arrangement is designed as shown in Figure 7 to ensure that at least one groove is engagable by a rib within the complete range of adjustment of the support member 114.

The two embodiments as just described each provide for the U-spring limbs to have the ribs which engage with grooves in the hub of the support member, however this is not essential within the scope of this invention, and the disposition of the ribs and grooves could be reversed so that there are still a series of arcuately spaced formations for inter-engagement with the grooves being on the spring limbs with the ribs or the like on the hub.

In addition, or alternatively, each spring limb and each face of the hub could be formed with such inter-engagable formations and the formations could be aligned and in register with one another or staggered.

Various other modifications to the invented adjustable support bracket are envisaged as

within the scope of this invention.

The U-shaped spring and the mount fixture being integral such as by a single plastics moulding. By such an arrangement the two opposed arms of the spring would extend from the pedestal and by the design of the arms these would be biased towards each other and have the formations integrally formed therein.

- 10 It will be appreciated that the design and shape of the housing and trims or covers and fixtures could be changed for suite styling of a range of ablutionary fittings associated with a shower. The type and shape of the socket entry for supporting a handset may be varied to suit the design and type of handset, and the fork style for easy removal of the handset is not essential.

- 20 The invented adjustable support bracket provides many advantages both in simple and compact construction as well as ease of use for a user avoiding dextrous manipulation for adjustment of the handset during use when, due to the wet conditions, it is difficult to apply manual force for tightening clamping devices of known typical kind. Furthermore, the invented adjustable support bracket has particular application for institutional or domestic use where disabled or handicapped users can make the adjustments for themselves even with limited articulation of hands or fingers.

Other advantages and details of construction will be appreciated by those familiar with the design of fittings for ablutionary appliances.

CLAIMS

1. An adjustable support bracket for a shower handset, the bracket comprising a support member having a socket entry portion for receiving and supporting a shower handset, the socket entry portion being radially spaced from a hub portion of the support member that is mounted for controlled rotational movement on a spindle, and a spring member biased towards the hub portion to engage same with the hub portion and the spring member each being provided with a plurality of arcuately spaced inter-engagable formations that cooperate as a detent device to enable the support member to be rotated on the spindle to any one of a plurality of adjustment positions defined by the inter-engagement of the formations.

2. A bracket according to Claim 1 wherein the hub portion of the support member comprises an annular flange of which one face is formed with arcuately spaced radially extending formations for inter-engagement with the formations of the spring member.

3. A bracket according to Claim 2 wherein the interengagable formations are respective grooves and ribs.

4. A bracket according to Claim 2 or Claim 3 wherein the formations are arranged in a plurality spaced for a wide range

of selectable positions.

5. A bracket according to any one of Claims 2, 3 or 4 wherein the spring member comprises a U-shaped spring of which each side limb extends to one side of the annular flange of the hub that is received between the limbs of the spring member with the base of the spring member being remote from the socket entry portion of the support member.

6. A bracket according to any one of the preceding Claims wherein the bracket further comprises a mounting plate adapted for securing to a structure with the mounting plate supporting the base of the U-shaped spring member.

7. A bracket according to any one of Claims 1, 2, 3, 4 or 5 wherein the bracket further comprises clamping means for slidably mounting the bracket on a slide rail.

8. A bracket according to Claim 7 wherein the clamping means comprises a stirrup arranged for movement relative to the spindle by cam means provided by a rotatable knob mounted on the spindle having an eccentric face engaging the stirrup so that the stirrup is displaced relative to a rail embraced by the stirrup on rotational movement of the rotatable knob.

9. A bracket according to Claim 8 wherein the spindle mounts a knob on each end so that the clamping means may be operated on either side of the support bracket.

10. A bracket according to any one of the preceding Claims and further comprising a housing for enclosing the assembly and through which the support member projects with clearance for the socket entry portion to move through the range of adjusting movement.

11. A bracket for a shower handset substantially as herein before described with reference to the accompanying drawings of Figures 1, 2, 3 and 4.

12. A bracket for a shower handset substantially as herein before described with reference to the accompanying drawings of Figures 5, 6 and 7.

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